

Appl. No.: 10/560,560

Reply to Office Action of: 06/12/2007

REMARKS

Claim 6 and 7 have been amended above to overcome the examiner's objections noted in section 1 of the office action.

Claims 1, 2, 7-10 and 14-16 were rejected under 35 U.S.C. §102(e) as being anticipated by Hwang (US 6,478,622 B1). Claims 3-6 were rejected under 35 U.S.C. §103(a) as being unpatentable over Hwang (US 6,478,622 B1). Claims 11-13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Hwang (US 6,478,622 B1) in view of Carey, II et al. (US 6,858,322 B2). The examiner is requested to reconsider these rejections.

Claim 1 claims that the shielding cage comprising a diecast metal section and a sheet metal section. The examiner stated that Hwang discloses a diecast metal section (section of element 90). This is incorrect. "90" in Hwang is described as preferably made of blank material such as a metal plate (see column 3, lines 18-20). There is no disclosure or suggestion in Hwang that the grounding device 90 is a diecast member. Claim 1, on the other hand, claims that the shielding cage comprises a diecast metal section.

As noted in the application, diecast shielding cages are advantageous in that they provide a considerable degree of freedom in shaping as well as robustness. However, a problem associated with such diecast shielding cages is that the diecast material generally exhibits a thermal expansion coefficient that substantially differs from the thermal expansion coefficient of the circuit board. Depending on the way of mounting the shielding case to the circuit board, a

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shear stress or push/pull stress may develop between the cage and the circuit board as a result of heat applied in the mounting process. This problem is exacerbated by the need to conduct reflow operations at significantly higher temperatures to enable the use of lead free solders, which have a significantly higher melting point as compared with lead-based solders.

The invention overcomes this problem by providing a shielding cage with both a diecast section and a sheet metal section. The diecast section has the advantages of a considerable degree of freedom in shaping the section as well as robustness. The sheet metal section adds to the combination a good thermal expansion coefficient that is substantially the same as the thermal expansion coefficient of the circuit board. Thus, a shear stress or push/pull stress does not develop between the cage and the circuit board as a result of heat applied in the mounting process. This overcomes the problem associated with reflow operations at significantly higher temperatures to enable the use of lead free solders, which have a significantly higher melting point as compared with lead-based solders.

The examiner is directed to MPEP 2113. As stated in this section of the MPEP,

"The structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing

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process steps would be expected to impart distinctive structural characteristics to the final product. See, e.g., In re Garnero, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979) (holding "interbonded by interfusion" to limit structure of the claimed composite and noting that terms such as "welded," "intermixed," "ground in place," "press fitted," and "etched" are capable of construction as structural limitations.)"

As noted above, in the present case, a "diecast metal section" has structural attributes which the grounding device 90 of Hwang (made from a metal plate) does not have. The combination of a shielding cage having both a diecast metal section and a sheet metal section as claimed in claim 1 is not disclosed or suggested in the cited art. Therefore, claim 1 is patentable and should be allowed.

Though the claims dependent upon claim 1 contain their own allowable subject matter, these claims should at least be allowable due to their dependence from allowable claim 1. However, to expedite prosecution at this time, no further comment will be made.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record. Accordingly, favorable reconsideration and allowance is respectfully requested. Should any unresolved issue remain, the examiner is invited to call applicants' attorney at the telephone number indicated below.

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